

Course objective	Geisel competency	Course Objective
1	1a	To recognize, identify and differentiate the internal and external structures of procaryotic and eukaryotic microbial cells.
2	1a	To explain the function of structures of bacterial and fungal cells that are important for causing disease.
3	1a	To describe the morphologies and growth forms of fungal pathogens in clinical specimens, in the environment and in laboratory media.
4	1a	To explain the basic stages of microbial growth and their importance to disease.
5	1a	To explain the basic features of microbial genomes and discuss the role of microbes in elucidating basic genetic mechanisms such as mutation, recombination and transfer of DNA between cells.
6	1a	To describe the basic metabolic properties of microbial cells.
7	1a	To list pathogens that grow intracellularly within host cells and explain the advantages of intracellular growth.
8	1a	To describe the characteristics of morphology, metabolism or antigenic structure that aid in recognition of pathogens by the clinical laboratory and explain how pathogens are distinguished from normal flora and non-pathogens. Explain alternatives for staining and culturing that are used to identify the presence of or exposure to microbial pathogens.
9	1a,1c	To recognize the essential properties of clinical specimens that are important for pathogen identification and hazards associated with handling infected clinical specimens.
10	1a,1c	To describe and practice methods for laboratory culture and staining for detection of microbes in clinical specimens; explain limitations of staining and culturing if applicable.
11	1a,1c	To describe and practice the basic principles of chemotherapy and disinfection through laboratory exercises accompanied by case studies.
12	1a,1c	To describe the mechanisms that lead to microbial resistance to antibiotics.
13	1a,1c,2e	To describe the symptoms and clinical features of diseases caused by bacteria and fungi.
14	1a,1b	To describe the postulates used to establish that a disease is caused by a specific microbe as well as Kochs molecular postulates to establish the role of a specific structure or gene product in disease.
15	1a	To describe factors important for virulence of each microbial pathogen if known.
16	1a,1e	To describe how pathogenic microbes are spread from person to person through the population and methods of spread in the environment.
17	1a,2d	To explain how specific infections are prevented and treated.
18	1a	To specify whether a microbial disease is caused by a toxin or by invasiveness.
19	1a,1e	To list microbial toxins that cause human disease, describe the mechanism of action of each toxin and explain if antitoxins are used in treatment.
20	1a,1e	To specify whether a vaccine exists to prevent each disease caused by a microbe and describe the molecular basis of the vaccine function.
21	1a,1e	To describe properties of microbial vaccines in terms of live vs killed, subunit or toxoid.
22	1a,1e	To describe underlying risk factors in mammalian hosts that increase susceptibility to microbial pathogens.
23	1a,6a	To apply knowledge of methods used by clinical laboratories to understand how infections are diagnosed; and to recognize the presence of normal flora and to explain beneficial roles of normal flora.
24	4a	To behave respectfully and responsibly towards colleagues and members of the health-care team at all times.
25	2f,3f	To solve problems effectively through collaboration with student colleagues.
26	4f,4g	To take responsibility for own work and gain competence in skills associated with microbiology.
27	4b,4h	To meet professional responsibilities fully, including being punctual, present, and engaged in laboratory activities activities, and being reliable in commitments to tasks.
28	1c	To practice utilization of effective procedures for disinfection and disposal of biological hazardous waste.
29	2g,6h	To interact with personnel from the clinical laboratory during laboratory sessions and develop the practice of consulting clinical laboratory specialists in the future.
30	5a,5c,6a,6b	To benefit from physician input into exercises and cases for student analysis.
31	4l	To provide opportunities to enhance communication between instructors and students.
32	1e,4d	To discuss the consequences of disregarding ethics related to medical human experimentation.